

CLAIMS

What is claimed is:

Claim 1. A precise linear fastener system comprising:

a collet member having a base end, a top end, an inner engaging surface, and an outer ribbed surface positioned about a central axis;

a compression ring member having a base end, a front end, an inner ribbed surface, and an outer surface positioned about a central axis;

said inner ribbed surface of said compression ring member being constructed and arranged for coaxial alignment and overlapping engagement with respect to said outer ribbed surface of said collet member, said compression ring member linearly traversable with respect to said outer ribbed surface of said collet member between a first release position and a second engaged position, wherein said engaged position results in said ribbed surfaces compressing said collet member and tensilely loading said compression ring member to engage a shank member having an outer gripping surface, and wherein said release position results in expansion of said collet member thereby releasing said outer gripping surface of said shank member.

Claim 2. The precise linear fastener system of claim 1

including

1 a shank member having an outer gripping surface, a first end,  
2 and a second end.  
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4 Claim 3. The precise linear fastener system of claim 1  
5 wherein said ribbed outer surface of said collet member  
6 includes at least one outwardly and circumferentially extending  
7 rib, each said rib including a first ramp surface to facilitate  
8 coaxially aligned linear overlapping movement of said  
9 compression ring in relation to said collet member for  
10 engagement thereof, and a second ramp surface to facilitate  
11 linear removal of said compression ring from said collet  
12 member.  
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14 Claim 4. The precise linear fastener system of claim 1  
15 wherein said inner engaging surface of said collet member is  
16 constructed and arranged with a conjugate shape in relation to  
17 said outer gripping surface of said shank member.  
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19 Claim 5. The precise linear fastener system of claim 1  
20 wherein said inner engaging surface of said collet member is  
21 constructed and arranged with internal threads.  
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23 Claim 6. The precise linear fastener system of claim 1  
24 wherein said inner engaging surface of said collet member is  
25 constructed and arranged with a knurled surface.  
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1        Claim 7. The precise linear fastener system of claim 1  
2        wherein said inner engaging surface of said collet member is  
3        constructed and arranged with a generally smooth surface.  
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5        Claim 8. The precise linear fastener system of claim 1  
6        wherein said inner engaging surface of said collet member is  
7        constructed and arranged with at least one inwardly depending  
8        lip; wherein said inwardly depending lip is constructed and  
9        arranged with at least one tapered surface for cooperation with  
10       a conjugate tapered surface on said outer gripping surface of  
11       said shank member;

12       wherein linear traversal of said compression ring member  
13       with respect to said axially aligned collet member compresses  
14       said collet member and tensilely loads said shank member.  
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16       Claim 9. The precise linear fastener system of claim 1  
17       wherein said inner engaging surface of said collet member is  
18       constructed and arranged with at least one inwardly depending  
19       lip, wherein said inwardly depending lip is constructed and  
20       arranged for cooperation with at least one snap ring groove in  
21       said outer gripping surface of said shank member;

22       wherein linear traversal of said compression ring member  
23       with respect to said axially aligned collet member compresses  
24       said collet member to engage said at least one snap ring  
25       groove.

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Claim 10. The precise linear fastener system of claim 1 wherein said first end of said shank member includes a tensioning means, said tensioning means being constructed and arranged to allow said shank member to be tensilely loaded prior to linear traversal of said compression ring member into said engagement position with respect to said collet member.

Claim 11. The precise linear fastener system of claim 10 wherein said shank member tensioning means includes at least two generally flat surfaces, wherein said at least two generally flat surfaces are constructed and arranged for gripping and placing a tensile load on said shank member prior to linear traversal of said compression ring member into said engagement position with respect to said collet member.

Claim 12. The precise linear fastener system of claim 10 wherein said shank member tensioning means includes at least one groove extending around the circumference of said first end of said shank member, wherein said at least one groove is constructed and arranged for gripping and placing a tensile load on said shank member prior to linear traversal of said compression ring member into said engagement position with respect to said collet member.

1        Claim 13. The precise linear fastener system of claim 10  
2        wherein said shank member tensioning means includes at least  
3        one internal bore extending inwardly from said first end of  
4        said shank member along the longitudinal centerline of said  
5        shank member, wherein said at least one internal bore is  
6        constructed and arranged for gripping and placing a tensile  
7        load on said shank member prior to linear traversal of said  
8        compression ring member into said engagement position with  
9        respect to said collet member.

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11        Claim 14. The precise linear fastener system of claim 13  
12        wherein said internal bore includes internal threads.

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14        Claim 15. The precise linear fastener system of claim 13  
15        wherein said internal bore includes at least one axially  
16        aligned groove extending around the circumference of said  
17        internal bore.

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19        Claim 16. The precise linear fastener system of claim 10  
20        wherein said shank member tensioning means includes a frangible  
21        stem, whereby said frangible stem is severed from said first  
22        end of said shank member when said first member reaches a  
23        predetermined tension prior to linear traversal of said  
24        compression ring member into said engagement position with  
25        respect to said collet member.

1        Claim 17. The precise linear fastener system of claim 1  
2        wherein said outer ribbed surface of said collet member and  
3        said inner ribbed surface of said compression ring member are  
4        constructed and arranged to maintain an axially aligned  
5        interfitting relationship in said release position.

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7        Claim 18. The precise linear fastener system of claim 1  
8        wherein said outer surface of said compression ring member  
9        includes at least two wrench flats for increasing or decreasing  
10       the said tension applied to said shank member subsequent to  
11       linear traversal of said compression ring member into said  
12       engagement position with respect to said collet member.

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14       Claim 19. The precise linear fastener system of claim 1  
15       wherein said collet member is constructed of plastic.

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17       Claim 20. The precise linear fastener system of claim 1  
18       wherein said collet member is constructed of copper.

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20       Claim 21. The precise linear fastener system of claim 1  
21       wherein said collet member is constructed of brass.

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23       Claim 22. The precise linear fastener system of claim 1  
24       wherein said collet member is constructed of bronze.

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1        Claim 23. The precise linear fastener system of claim 1  
2        wherein said collet member is constructed of aluminum.

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4        Claim 24. The precise linear fastener system of claim 1  
5        wherein said collet member is constructed of steel.

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7        Claim 25. The precise linear fastener system of claim 1  
8        wherein said collet member is constructed of rubber.

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